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NOAA TECHNICAL MEMORANDUM NWSTM PR-25

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1981 TROPICAL CYCLONES - CENTRAL PACIFIC

ANDREW K. T. CHUN

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / National Weather Service

PACIFIC REGION
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I

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National Weather Service, Pacific Region Subseries

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No. 5 A Computer Method to Generate and Plot Streamlines. Roger A. Davis. February 1969. (PB-183-622)

No. 6 Verification of an Objective Method to Forecast Frontal Passages in the Hawaiian Islands. E. M. Carlstead. September 1969.

No. 7 Meteorological Characteristics of the Cold January 1969 in Hawaii. Richard I. Sasaki. November 1969. (PB-188-040)

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NOAA Technical Memorandum NWSTM PR-25

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III

CENTRAL NORTH PACIFIC TROPICAL CYCLONE DATA, 1981[1]

Name	Dates	Maximum Class	Maximum Sustained Winds (Kt)	Lowest Pressure (MB)	Total Hours Observed
GREG	Aug 20-22	Tropical Storm	E45 (NESS)	N/A	18(TS), 30(TD)
JOVA	Sep 18-20	Tropical Storm	E50 (NESS)	N/A	48(TS), 12(TD)

Key

TS Tropical Storm

TD Tropical Depression

Total hours observed per class:

TS 66

TD 42

[1]Data pertains only to period storm was in the central Pacific

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TROPICAL STORM GREG - August 20-22, 1981

GREG was born T.D. 8E off the coast of Mexico near 16N 112W on August 13, 1981. The Eastern Pacific Hurricane Center (EPHC) issued its first bulletin on T.D. 8E at 130900 GMT. At that time, the depression had maximum sustained winds estimated at 30 knots. T.D. 8E was upgraded to a tropical storm and named GREG on the 14th at 1800 GMT with maximum sustained winds of 40 knots. GREG followed a westerly course for several days and maintained tropical storm intensity.

As he approached 140W, he intensified and became a hurricane at 200600 GMT. His life as a hurricane was short lived. He moved under strong upper level southwesterlies and the resulting shearing action caused him to weaken rapidly. GREG was downgraded to a tropical storm at 201800Z, just prior to crossing 140W. Responsibility for GREG was passed to the Central Pacific Hurricane Center (CPHC) at this time. The first bulletin by the CPHC was issued at 210300 GMT. GREG continued to weaken and was downgraded to a tropical depression at 211800 GMT (Fig. 1). T.D. GREG maintained a well defined circulation for another 24 hours.

The CPHC issued 8 advisories on the storm with the last bulletin issued at 222100 GMT. There were no reports of damages or casualties to ships.

Verification statistics (Fig. 2) verified the 24-hour CPHC forecast and forecasts from the EPHC77, EPANLG, and EPCLPR models. All computations were made using the best track positions.

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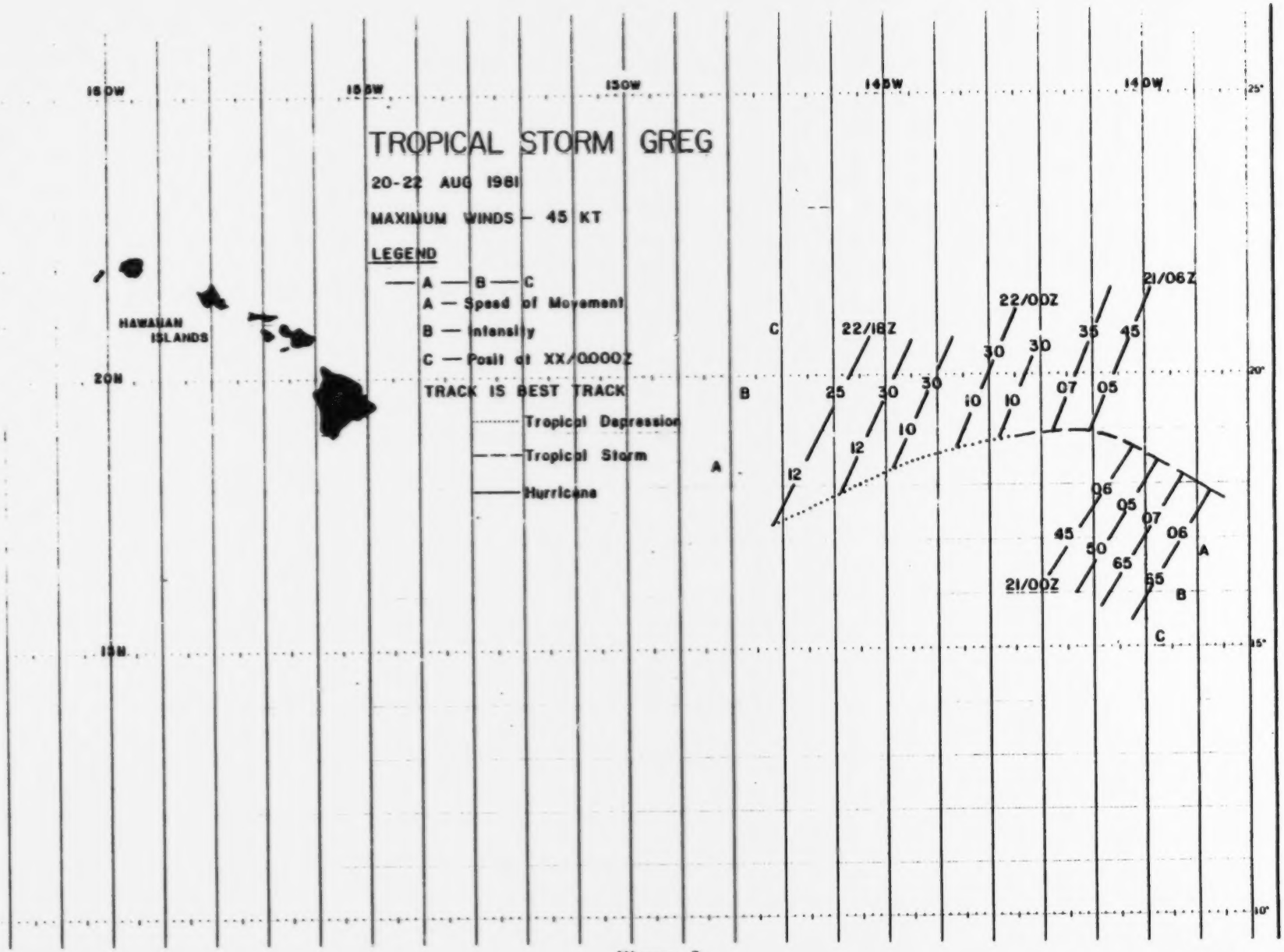

Figure 1

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TROPICAL STORM GREG - AUGUST 20-22, 1981

Date/ Time (GMT)	Best Track LAT/ LONG	Actual Track LAT/ LONG	Error (NM)	24-HOUR FORECAST POSITION					24-HOUR FORECAST ERROR (NM)				
				CPHC Lat/ Long	EPHC77	EPANLG	EPCLPR	MFM	CPHC	EPHC77	EPANLG	EPCLPR	MFM
2100	18.7N 140.2W	18.7N 140.2W	0										
2106	18.9N 141.1W	18.9N 141.1W	0										
2112	18.9N 141.8W	19.0N 141.8W	6										
2118	18.7N 142.9W	18.7N 142.9W	0										
2200	18.6N 143.7W	18.6N 143.7W	0	20.2N 142.2W	18.8N 143.3W	19.4N 143.0W	18.6N 143.1W		130	34	69	72	
2206	18.3N 144.9W	18.3N 144.9W	0	20.0N 144.3W	19.7N 144.5W	20.0N 143.7W	19.7N 144.3W		107	88	119	92	
2212	17.8N 146.0W	17.7N 146.0W	6	19.3N 145.3W	19.4N 145.4W	20.0N 144.6W	19.4N 145.3W		107	103	153	103	
2218	17.3N 147.2W	17.3N 147.2W	0	18.3N 147.2W	18.1N 146.6W	19.5N 146.0W	18.2N 146.8W		60	62	148	63	

*CPHC Mean Vector Error = 1.5 Nautical Miles
Number of cases: 8

CPHC Mean 24-Hr Error = 101 Nautical Miles
Number of cases: 4

EPHC77 Mean 24-Hr Error = 72 Nautical Miles
Number of cases: 4

EPANLG Mean 24-Hr Error = 122 Nautical Miles
Number of cases: 4

EPCLPR Mean 24-Hr Error = 83 Nautical Miles
Number of cases: 4

* The vector error is the distance of the initial position from the best track.

Figure 2

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TROPICAL STORM JOVA - September 18-20, 1981

JOVA began as T.D. 12E on September 14, 1981. The Eastern Pacific Hurricane Center (EPHC) issued its first bulletin at 141200 GMT. T.D. 12E intensified rapidly and was upgraded to a tropical storm and named JOVA at 141800 GMT. JOVA continued to strengthen and reached hurricane intensity 24 hours later at 151800 GMT. From her birth to the time she reached hurricane intensity, JOVA moved in a westerly direction. Between 151800 and 160000 GMT, the storm took a northerly track and moved toward the west northwest, reaching a maximum intensity of 75 knots.

As JOVA approached 140W, she began to weaken and turned toward the west again (Fig. 3). JOVA was downgraded to a tropical storm at 181200 GMT and passed to the Central Pacific Hurricane Center (CPHC). CPHC issued its first bulletin at 182100 GMT. JOVA continued to weaken over the next 48 hours while moving westward at 15 to 18 knots. As she approached 150W, an upper level trough and a rapidly moving mid latitude low north of the Hawaiian Islands began to lend their influence to the storm's movement and JOVA began to move toward the west northwest (Fig. 3). As a tropical storm, JOVA passed within 90 miles of the island of Hawaii at 201200 GMT. She was downgraded to a depression at 201800 GMT. The track of T.D. JOVA brought her within 60 miles of the eastern coasts of Maui, Molokai, and Oahu. During this period she deteriorated rapidly and the final bulletin by CPHC was issued at 210300 GMT.

JOVA's positions and intensities while in the CPHC's area were determined almost entirely by satellite fixes and estimations using DVORAK's techniques. However, as JOVA neared the Hawaiian Islands, ship KCKB at 200000 GMT reported winds of 090 degrees 35 knots 135 miles northwest of the storm's center. At 200600 GMT the same ship reported winds of 050 degrees 35 knots 125 miles north of the center.

The CPHC issued 10 advisories on the storm. There were no reports of damages or casualties to ships.

In view of the rapid speed of movement (about 50% higher than normal) that JOVA moved through the CPHC area, the CPHC 24-hour error of 81.1 miles was extremely gratifying. Climatologically, systems moving through the same area that JOVA did average 10 knots.

Verification statistics in Fig. 4 verified the 24-hour CPHC forecast and forecasts from the EPHC77, EPANLG and EPCLPR models. Statistical computations on the MFM and 48-hour forecasts were not made due to an insufficient number of cases. All computes were made from the best track positions.

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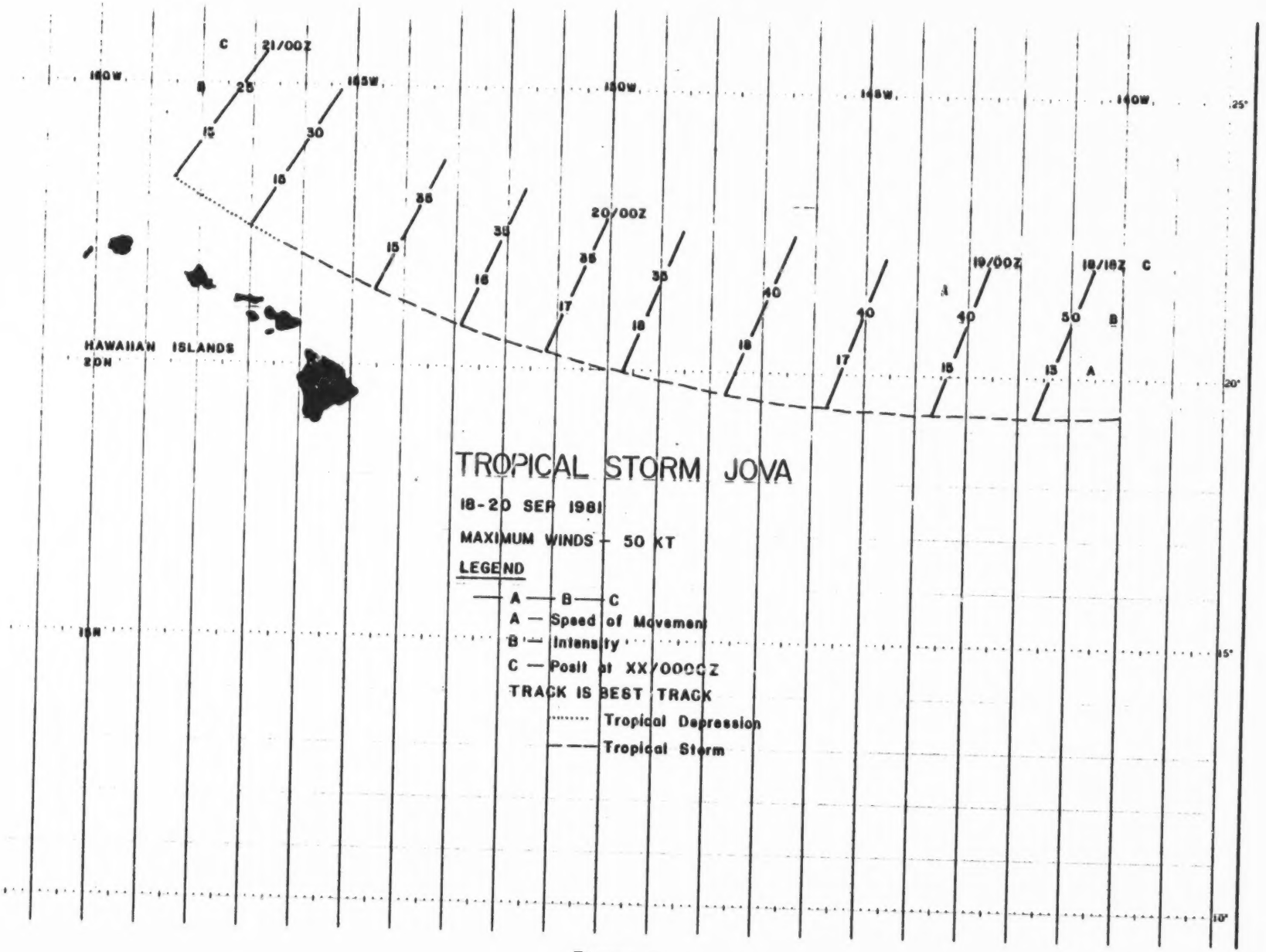

Figure 3

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TROPICAL STORM JOVA - SEPTEMBER 18-20, 1981

Date/ Time (GMT)	Best Track LAT/ LONG	Actual Track LAT/ LONG	Error (NM)	24 HOUR FORECAST POSITION					24 HOUR FORECAST ERROR (NM)					48 HOUR FORECAST POSITION					48 HOUR FORECAST ERROR (NM)				
				CPHC Lat/ Long	EPHC77	EPANLG	EPCLPR	NFN	CPHC	EPHC77	EPANLG	EPCLPR	NFN	CPHC Lat/ Long	EPHC77	EPANLG	EPCLPR	NFN	CPHC	EPHC77	EPANLG	EPCLPR	NFN
1818	19.3N 141.7W	19.3N 141.7W	0																				
1900	19.3N 143.7W	19.3N 143.7W	0																				
1906	19.4N 145.7W	19.4N 145.7W	0																				
1912	19.6N 147.7W	19.6N 147.7W	0																				
1918	20.0N 149.7W	20.0N 149.7W	0	19.5N 147.0W	18.8N 146.3W	20.2N 146.7W	18.6N 147.2W		155	220	180	175											
2000	20.3N 151.2W	20.5N 151.2W	12	19.5N 150.0W		20.0N 148.6W	19.5N 149.7W		90		160	110											
2006	20.8N 152.9	20.8N 152.9W	0	20.0N 153.0W	19.9N 151.5W	20.2N 150.7W	20.0N 152.2W		50	100	135	70											
2012	21.4N 154.5W	21.4N 154.7W	28	20.8N 155.7W	20.2N 153.5W	20.4N 153.4W	20.2N 154.5W	21.7N 151.8W	72	98	90	78	170					23.5N 148.9W					360
2018	22.5N 157.0W	23.0N 157.0W	30	21.7N 156.7W					50					20.0N 152.0W	18.8N 150.3W	21.2N 150.7W	18.0N 152.2W		318	470	385	405	
2100	23.3N 158.5W	23.3N 158.5W	0	22.1N 158.5W	21.9N 156.3W	21.7N 156.3W	21.8N 157.7W	23.0N 155.4W	70	160	167	120	120	21.0N 155.0W		20.9N 152.7W	19.9N 154.7W		210		380	317	

CPHC Mean Vector Error = 7.0 Nautical Miles
Number of cases: 10

CPHC Mean 24 Hr Error = 81.1 Nautical Miles
Number of cases: 6

EPHC77 Mean 24 Hr Error = 144.5 Nautical Miles
Number of cases: 4

EPANLG Mean 24 Hr Error = 146.4 Nautical Miles
Number of Cases: 5

EPCLPR Mean 24 Hr Error = 110.6 Nautical Miles
Number of cases: 5

Figure 4

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NOAA Technical Memoranda NWS

No. 9 Tropical Numerical Weather Prediction in Hawaii - 1971. E. M. Carlstead. March 1971. (COM-71-00494)

No. 10 Climatology of Rainfall Probabilities for Oahu, Hawaii. A. N. Hull and Jon Pitko. April 1972. (COM-73-10242)

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No. 21 The Estimation of Cirrus Cloud Over Oahu. Michael J. Morrow. August 1980. (PB81-108-086)

No. 22 1980 Tropical Cyclones - Central Pacific. Andrew K. T. Chun. March 1981. (PB81-198-699)

No. 23 Some Mean Characteristics of Central North Pacific Tropical Cyclones. Hans E. Rosendal. June 1981. (PB81-230-492)

No. 24 Relationship of Maximum Sustained Winds to Minimum Sea Level Pressure in Central North Pacific Tropical Cyclones. Hans E. Rosendal & Samuel L. Shaw. February 1982.

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